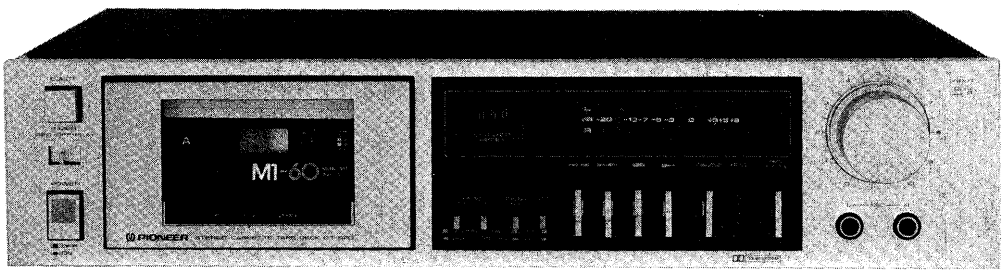
Operating Instructions

FULL LOGIC CONTROL
STEREO CASSETTE TAPE DECK
CT-520
HE



This operation manual is written in four languages. The English is from page 1 to page 14, the German from page 15 to page 28, the French from page 29 to page 42 and the Italian from page 43 to page 56. Please read the pages in your language to learn to use this product correctly.

Diese Bedienungsanleitung ist in vier Sprachen abgefaßt. Der englische Text reicht von Seite 1 bis Seite 14, der deutsche Text von Seite 15 bis Seite 28, der französische Text von Seite 29 bis Seite 42 und der italienische Text von Seite 43 bis Seite 56. Lesen Sie bitte die Seiten in Ihrer Muttersprache aufmerksam durch, um sich mit diesem Produkt gut vertraut zu machen.

Ce manuel d'utilisation a été rédigé en quatre langues. La version anglaise va de la page 1 à la page 14, la version allemande de la page 15 à la page 28, la version française de la page 29 à la page 42 et la version italienne de la page 43 à la page 56. Veuillez lire les instructions dans la langue qui vous intéresse pour apprendre à utiliser correctement ce produit.

Questo manuale d'istruzioni per l'uso è redatto in quattro lingue. L'inglese è da pag. 1 a pag. 14, il tedesco da pag. 15 a pag. 28, il francese da pag. 29 a pag. 42 e l'italiano da pag. 43 e pag. 56. Leggere attentamente le istruzioni nella propria lingua per usare correttamente questo prodotto.

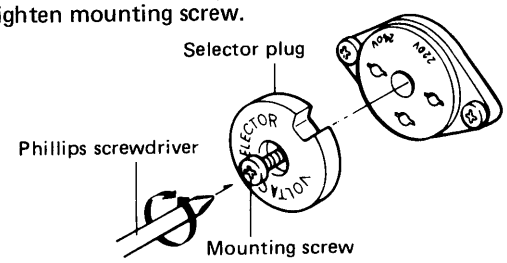
PIONEER®

LINE-VOLTAGE VARIATIONS

You will find the line voltage selector switch on rear panel. This switch has positions for 220V and 240V power sources.

Before your cassette tape deck is shipped from the factory, the switch is set to the power requirements of the destination; nevertheless, you should check that it is set properly before plugging the power cord into the outlet. If the voltage is not properly set or if you move to an area where the voltage requirements differ, adjust the selector switch as follows. After adjusting, connect the power cord.

1. Use a Phillips screwdriver to loosen mounting screw, then remove selector plug.
2. Reinstall the selector plug with its cut out section exposing the correct voltage indication.
3. Tighten mounting screw.



IMPORTANT

To prevent electric shock, do not remove cover. No user serviceable parts inside, refer servicing to qualified service personnel.

Always disconnect all the equipment from the mains supply when disconnecting the signal leads. The power cord should be connected last, make sure that the power switch is off.

Unplug the set from the wall socket when it is not to be used for an extended period of time.

ENGLISH

CONTENTS

Connections 3
Front Panel Facilities 4
Tape Recording 5
Tape Playback 8
Recording and Playback Using the Timer 10
Maintenance 11
Cassette Tapes 12
Dolby Noise Reduction System 13
Specifications 13
Troubleshooting 14

CONNECTIONS

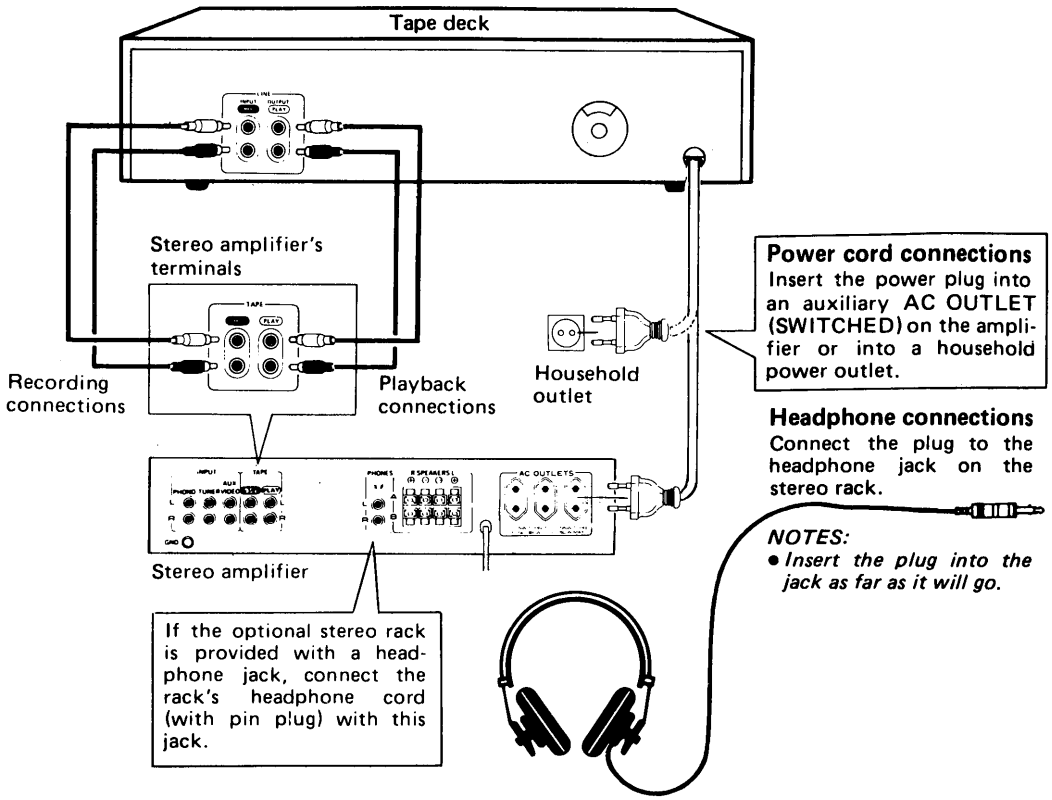
If you intend to hook up PIONEER system components, refer to the CONNECTIONS section in the Operating Instructions of the stereo amplifier. The section will help you connect the equipment more easily.

Rear panel connections

Recording cord connections
Connect the INPUT (REC) terminal of the tapedeck to the TAPE (REC) terminal of the amplifier.

Playback cord connections
Connect the OUTPUT (PLAY) terminal of the tape deck to the TAPE (PLAY) terminal of the amplifier.

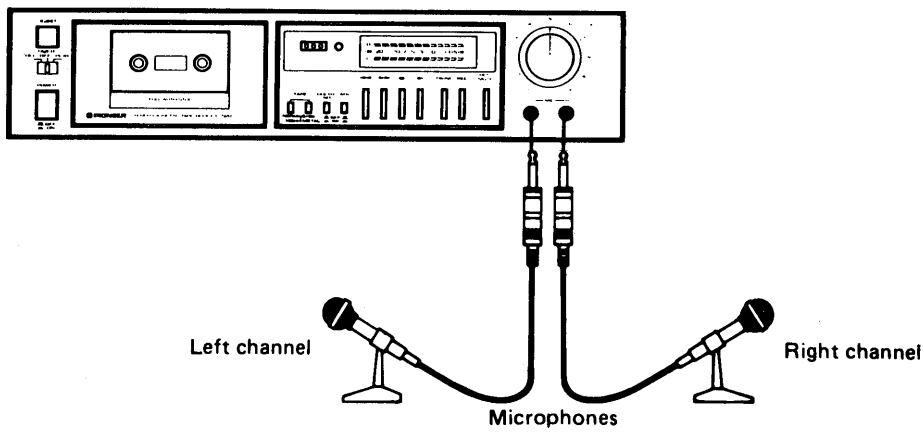
NOTES:
- *Connect the white plug to the left (L) channel and the red plug to the right (R) channel.*
- *Make sure that all the plugs are pushed into the jacks as far as they will go.*


Tape deck
Stereo amplifier's terminals
Recording connections
Playback connections
Household outlet
Power cord connections
Insert the power plug into an auxiliary AC OUTLET (SWITCHED) on the amplifier or into a household power outlet.
Headphone connections
Connect the plug to the headphone jack on the stereo rack.
NOTES:
• Insert the plug into the jack as far as it will go.
Stereo amplifier
If the optional stereo rack is provided with a headphone jack, connect the rack's headphone cord (with pin plug) with this jack.

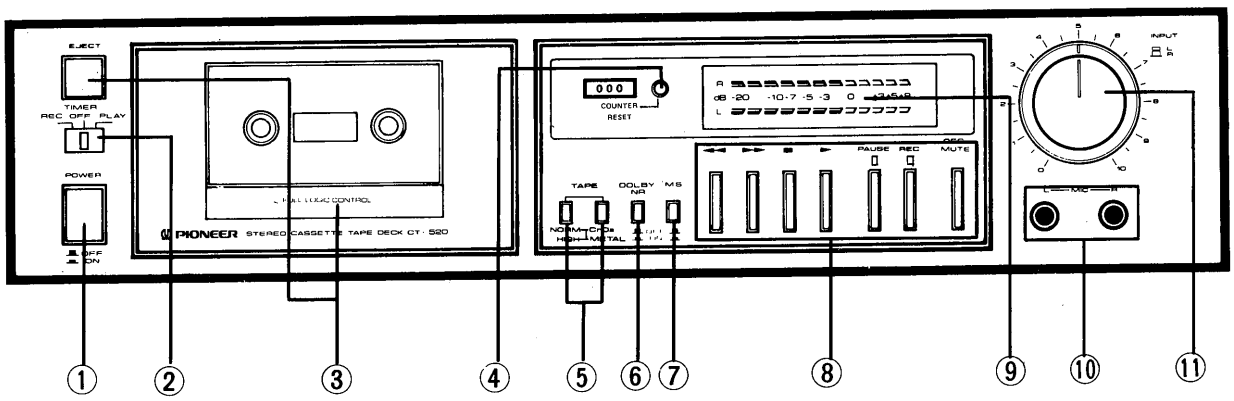
Front panel connections

Microphone connections
Insert the plug into the unit's MIC jacks.

NOTES:
- *Connect the left channel microphone to the L jack, and the right channel microphone to the R jack.*
- *Insert the plug into the jack as far as it will go.*



FRONT PANEL FACILITIES



① POWER switch

Used to switch the unit's power on and off.
Power is ON: Meter lights.
Power is OFF: Meter goes off.

② TIMER start switch

Used for unattended recording and wake-up playback operations. (For details, turn to page 10.) Normally, this switch is kept at the OFF position.
OFF: For normal tape play and recording.
REC: For unattended recording.
PLAY: For wake-up playback.

③ EJECT button and cassette holder

The cassette tape is housed in this holder (for details, turn to page 5.)
To open the holder: Depress the EJECT button.
To close the holder: Push the holder by hand.

NOTE: Do not depress the EJECT button while the tape is traveling.

④ Tape COUNTER and RESET button

The figures on the tape counter increase or decrease in line with the forward or reverse movement of the tape. If the counter is set to "000" at the start of recording, it will be easy to find the recording start position when you want to listen to the program again at a later date.

⑤ TAPE SELECTOR switches

Use these switches in line with the tapes being used.
For normal tapes:
- Set the left-side switch to the NORM ▁▁ (out) position.
- The right-side switch position is not used.

For chrome tapes:
- Depress the left-side switch to the HIGH ▁▁ (in) position.
- Set the right-side switch to the CrO_2 ▁▁ (out) position.

For metal tapes:
- Depress the left-side switch to the HIGH ▁▁ (in) position.
- Depress the right-side switch to the METAL ▁▁ (in) position.

⑥ DOLBY* NR switch

Set to the depressed ON position when recording and this will reduce the amount of tape hiss (turn to page 13). Also set to ON when playing a tape which has been recorded using the Dolby noise reduction system.

⑦ MS switch

Set to ON when automatically searching the start of a program. (For details, turn to page 9.) Normally, this switch is kept at the OFF position.

⑧ Function switches

Rewind switch (◀◀):
Depress to rewind the tape.
Fast forward switch (▶▶):
Depress to fast forward the tape.
Stop switch (■):
Depress to stop the playback, recording, fast forward and rewind operations.
PLAY switch (▶):
Depress to start tape play.
PAUSE switch:
Depress to temporarily suspend recording or to adjust the recording level. (For details, turn to page 6.)
Depress the PAUSE switch to resume recording.

NOTE: The tape will not stop even if this switch is depressed when you are performing a rewind or fast forward operation.

REC switch:
Depress to start recording operations.
REC MUTE switch:
Push to create unrecorded blanks between tape programs. (For details, turn to page 7.) When the switch is kept pushed during recording, no sound is recorded for as long as the switch is in the depressed position (thereby creating an unrecorded blank).

NOTE:
- *When the POWER switch is set to the OFF position, all the function switches are released to the OFF mode.*

⑨ Recording/playback level meter

This indicates the strength of the sound being played back or the sound about to be recorded.

⑩ MIC jacks

Plug the microphone(s) into these jacks when recording using microphones. (For details, turn to page to 6).
"L": Left channel jack, "R": Right channel jack

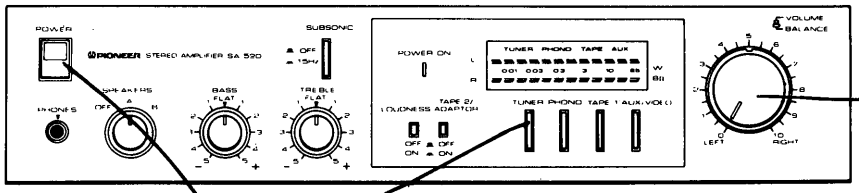
⑪ INPUT recording level controls

Rotate these controls while observing the level meter when adjusting the strength of the sound that is to be recorded. (For details, turn to page 6.) The strength is increased when the controls are rotated clockwise from the "0" minimum position.
Front control: For left channel adjustments
Rear control: For right channel adjustments
The controls normally rotate together. To rotate only one control, hold the other so that it will not move.

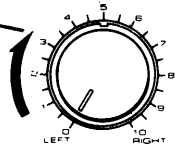
TAPE RECORDING

Recording Preparations

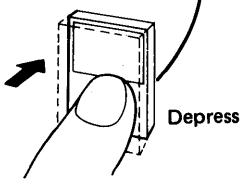
Set up the stereo amplifier and the program source (record or FM broadcast) unit whose sound is to be recorded.



3 **Rotate the VOLUME control to check recording the program source.**



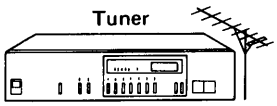
1 **Depress the POWER switch to ON.**



2 **Depress the FUNCTION switch to TUNER or PHONO for recording FM broadcast or the record.**

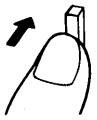
TUNER

Tuner

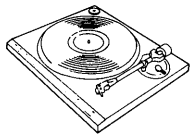


Operate the tuner and tune in the FM stations.

PHONO

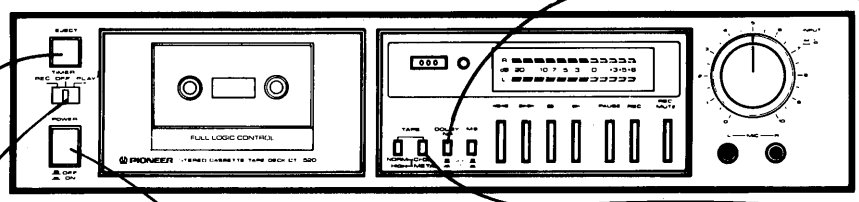


Turntable



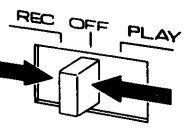
Provide the record for playback.

Tape Deck Preparations

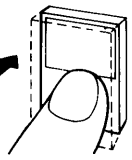


4 **Set the DOLBY NR switch either to ON or OFF.**
Set the switch to ON when recording the program source with the Dolby noise reduction system.

1 **Set the TIMER switch to OFF.**



2 **Depress the POWER switch to ON.**

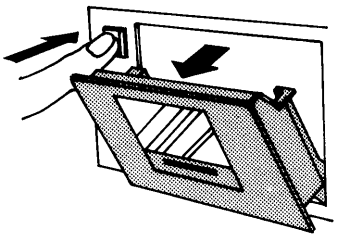


3 **Set the TAPE SELECTOR switches to the appropriate positions.**

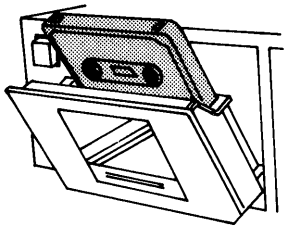
Select the position in accordance with the type of tape which is to be played. (Refer to the section on cassette tapes on page 12.)

5 **Inserting the cassette tape.**

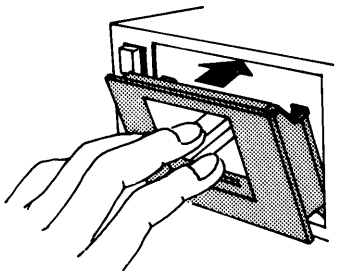
(1) Depress the EJECT button to open the tape holder.



(2) Insert the tape into the holder.
Load the tape with the exposed strip of tape at the bottom and the side to be recorded facing you.



(3) Close the holder.
Push the holder by hand until it is back in position.



NOTES:

- *Do not load the cassette with the exposed strip of tape at the top instead of bottom since this may result in trouble.*
- *On rare occasions the cassette is not secured properly when the tape holder is pushed back. In cases like this, take out the tape, rotate the tape reels slightly and then reload the tape.*
- *If the tape is half wound up or wound up on the right reel, rewind the tape onto the left reel following the instructions given for rewinding the tape.*
- *Always depress the STOP switch (■) to the stop mode before loading or ejecting the tape.*

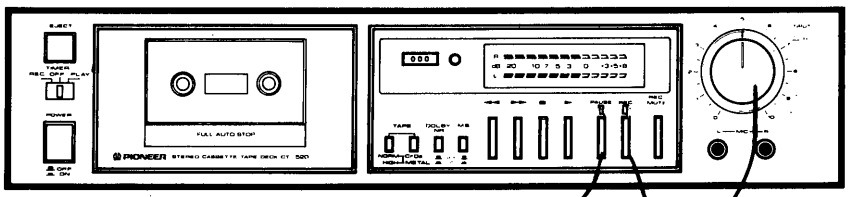
ENGLISH

NOTES:
- *Accidental erasure prevention tabs can be found on the top edge of the cassette tape. If these tabs have been broken out, the program source cannot be recorded.*
- *To record the program source onto a tape without the tabs, stick a piece of cellophane tape over the opening. (Turn to page 12.)*
- *A leader tape which cannot be recorded is provided at the beginning and end of the tape.*
- *Before recording, take up the leader onto the right-hand reel (allow the tape to travel for about 10 seconds in the play mode).*

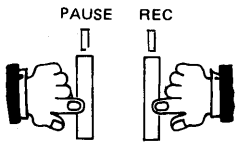
Recording FM Broadcast or Records

1 Play the program source which is to be recorded.

Play the record on the turntable if you are recording the records. Operate the tuner and turn in the station whose program is to be recorded if you are recording an FM broadcast.

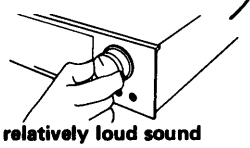


2 Depress the REC switch after the PAUSE switch has been depressed.



3 Set the recording level.

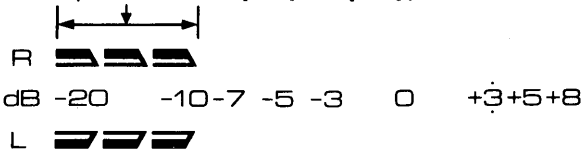
Observe the recording level meter and rotate the INPUT level controls.



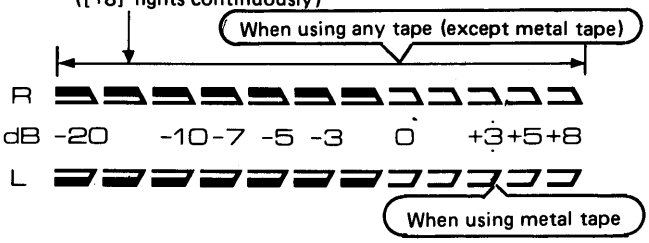
Adjust within the following range for a relatively loud sound

Distortion and noise are increased with the following adjustments.

- Noise increases with play if the level is too low. (Between around [−20] and [−10])

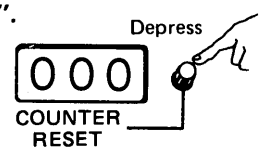


- Distortion increases with play if the level is too high. ([+8] lights continuously)



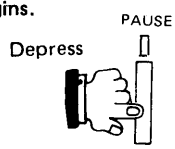
4 Set the tape counter to "000".

Depress the RESET button to set to "000".



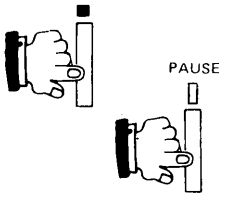
5 Start recording

As soon as the PAUSE switch is depressed, the tape moves from left to right and recording begins.



6 When stopping recording or using the PAUSE function

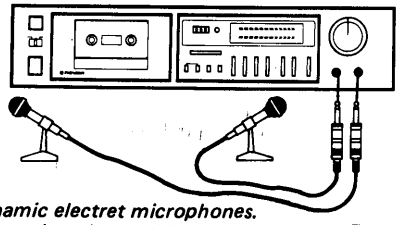
- **Depress the STOP switch (■).** This releases the recording mode and the tape stops traveling.
- **Depress the PAUSE switch.** The tape stops traveling but the recording mode is not released.
- **To resume recording, depress the PAUSE switch.**



7 Recording is completed.

The tape stops automatically when it is fully wound.

Recording with Microphones

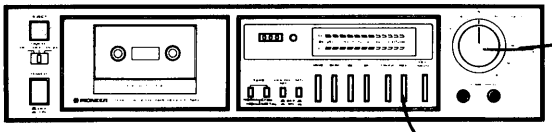


1. Plug the microphones into the unit's jacks.

2. The subsequent operations are the same as 2 through 5 for recording FM broadcast and records.

NOTES:
- *Use dynamic electret microphones.*
- *Make sure that the cord is not longer than 5 meters if you are using high-impedance microphones.*
- *Use the microphones at a distance from the speakers since howl (a prolonged wailing sound) may be heard when monitoring and sound through the speakers.*
- *There will be no howl if you monitor the recording with your headphones.*

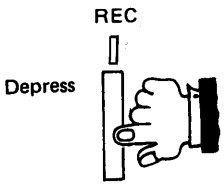
Erasing Recorded Sound



1 **Set the INPUT level controls to the "0" position (by rotating them to the leftmost position.)**

2 **Depress the REC switch to start recording.**

As the tape travels, the recorded sound is erased and the tape will be unrecorded.

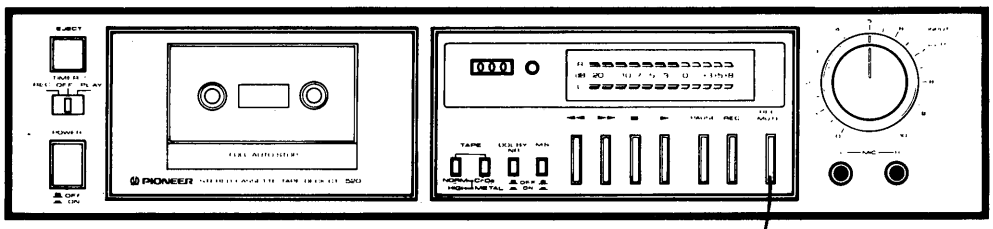


- **If you are using a metal tape, set the TAPE SELECTOR switch to the METAL position and erase the sound.**
- **When program is recorded onto a pre-recorded tape, the previous recording will be automatically erased.**

Recording with the REC MUTE Function

Proceed as follows when:

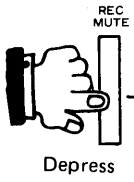
- **Creating unrecorded blanks which are used by the unit's MS function (this comes in handy for cutting out the commercials while recording an FM broadcast and leaving the unrecorded sections as blanks of about 5 seconds).**
- **Eliminating the noise heard when the stylus descends onto the record during the recording of the record.**



Creating unrecorded blanks for MS function

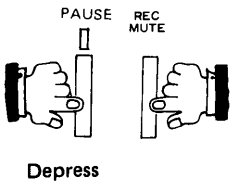
1 **Push the REC MUTE switch for about 5 seconds after you have recorded one program.**

No signals will be recorded only while this switch is in the depressed position. (Once the switch is released, recording will resume.)

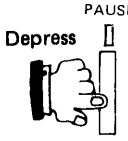


2 **Depress the PAUSE switch with the REC MUTE switch in the depressed position.**

The tape has stopped traveling. Now wait for the part of the program whose recording is not required to end. (The sound will be heard through the speakers but it will not be recorded.)

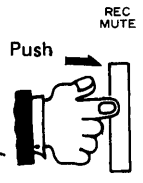


3 Once the part of the program which is not required has ended, depress the PAUSE switch and recording resumes.



Eliminating the noise with record play

1 **Push the REC MUTE switch immediately before the stylus descends onto the record.**



2 **Leave off your finger from the switch immediately before play begins after the stylus has descended onto the record.**

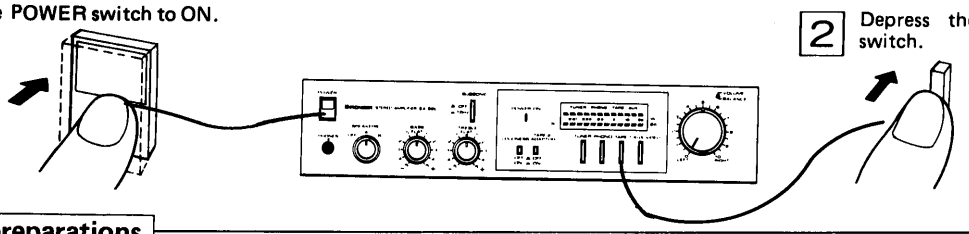
TAPE PLAYBACK

Playback Preparations

Set up the stereo amplifier for tape play.

1 Depress the POWER switch to ON.

2 Depress the TAPE function switch.



Tape deck preparations

1 **Set the TIMER START switch to the OFF position.**

2 Depress the POWER switch to ON.

3 **Load the cassette tape.**

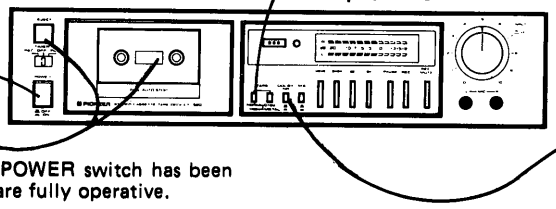
It takes about four seconds after the POWER switch has been set to ON before the function switches are fully operative.

4 **Set the TAPE SELECTOR switches to the appropriate positions.**

Select the position in accordance with the type of tape which is to be played. (Refer to section on cassette tapes on page 12.)

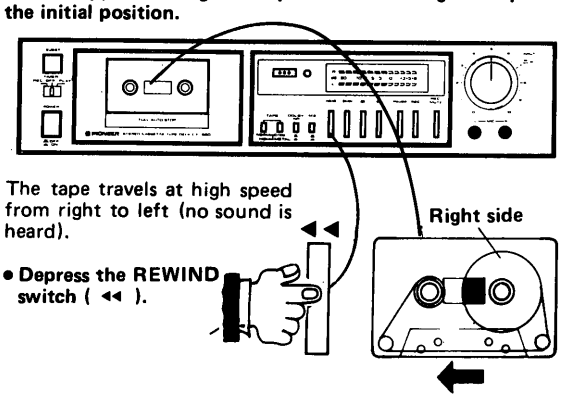
5 **Set the DOLBY NR switch either to ON or OFF.**

Set the switch to ON when playing back the tape with the Dolby noise reduction system; otherwise set it to OFF.



Rewinding the tape (◀◀).

When the tape is half wound up on the right-hand reel or fully wound up, rewinding the tape serves to bring the tape back to the initial position.



The tape travels at high speed from right to left (no sound is heard).

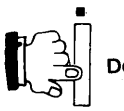
• **Depress the REWIND switch (◀◀).**

Right side

The tape stops automatically when it is completely wound up on the left-side reel.

Stopping rewinding

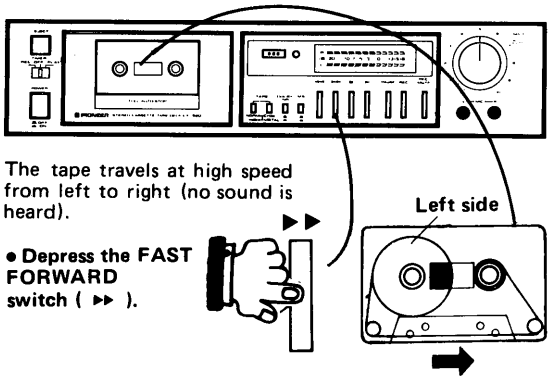
Depress the STOP switch (■).



Depress

Fast forwarding the tape (▶▶).

When the tape has been partially played, fast forwarding serves to wind up the tape fully.



The tape travels at high speed from left to right (no sound is heard).

• **Depress the FAST FORWARD switch (▶▶).**

Left side

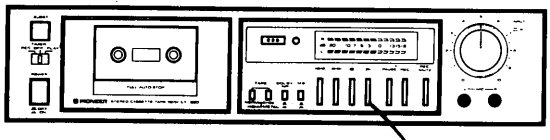
The tape stops automatically when it is completely wound up on the right-side reel.

Stopping/fast forwarding

Depress the STOP switch (■).

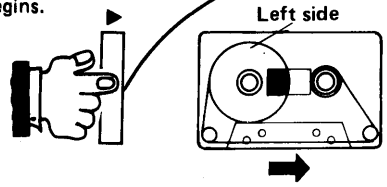
Depress

Tape Play



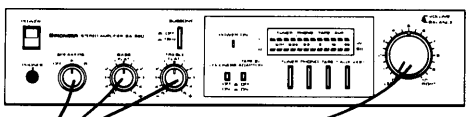
1 **Depress the PLAY switch (▶).**

The tape travels from left to right and play begins.



Depress

Left side



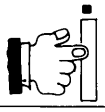
2 **Adjust the tone and volume of the sound using the controls on the stereo amplifier.**

3 **When play ends**

The tape automatically stops when it is completely wound up on the right-hand reel. (The POWER switch is not set to OFF.)

Stopping play

Depress the STOP switch (■).

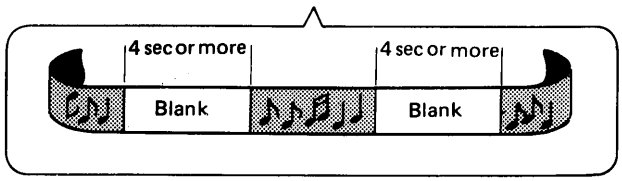


Depress

Music Search (MS) Function and Tape Play

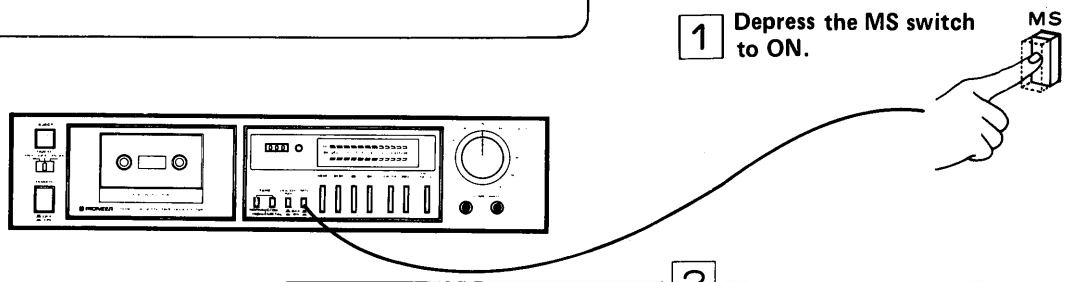
The music search function automatically locates the unrecorded blanks lasting more than 4 seconds between the programs on the tape and it starts play from the beginning of the desired program. Make use of this function when:

- Selecting a program which you want to listen to
- Listening to the same program again from the start
- Skipping the program now being heard to listen to the following (or previous) program.



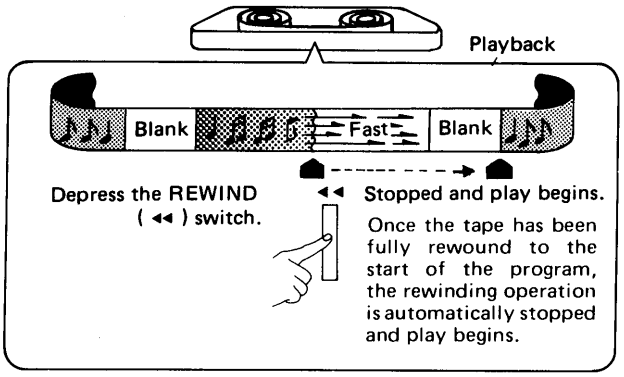
This deck comes with a function (known as REC MUTE) which makes it possible to create unrecorded blanks on the tape during recording quite easily. (Turn to page 7 for details.)

1 Depress the MS switch to ON.

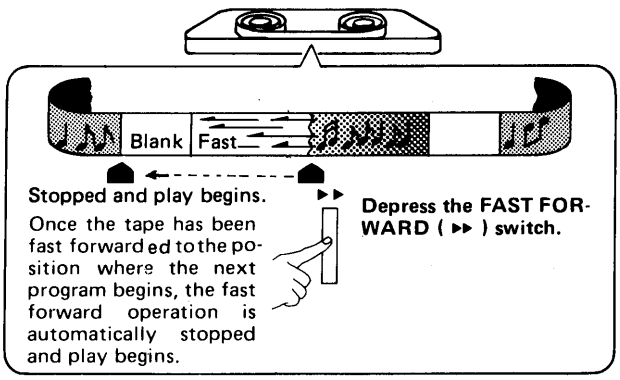


2

To listen to the same program again or the previous program:


Playback
Blank
Fast
Blank
Depress the REWIND (◂◂) switch.
◂◂ Stopped and play begins.
Once the tape has been fully rewound to the start of the program, the rewinding operation is automatically stopped and play begins.

To Listen to the program following that being played:


Blank
Fast
Stopped and play begins.
Once the tape has been fast forwarded to the position where the next program begins, the fast forward operation is automatically stopped and play begins.
▸▸
Depress the FAST FORWARD (▸▸) switch.

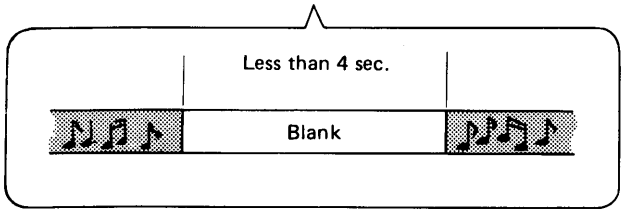
To listen to a program much further back on the tape, repeat this operation (the number of repeats should be equivalent to the number of programs recorded before the desired program is reached).

To listen to a program much further forward on the tape, repeat this operation (the number of repeats should be equivalent to the number of programs recorded until the desired program is reached).

NOTES:

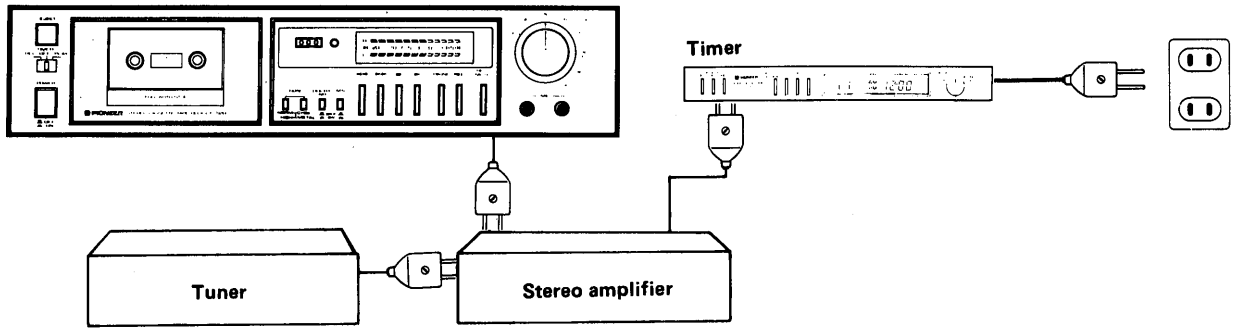
- *For these operations, make sure that you are using a tape with unrecorded blanks lasting at least 4 seconds between the programs.*
- *The MUSIC SEARCH function does not work with the following tapes:*
- *Tapes with recorded conversations where the sound breaks off over 3 seconds.*
- *Tapes where the sound is low level for more than 3 seconds.*

Always set the MS switch to OFF when MS operation is not carried out.



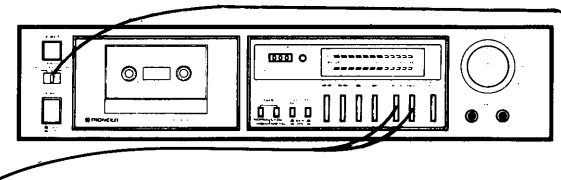
RECORDING AND PLAYBACK USING THE AUDIO TIMER

"Unattended recording", "Wake-up playback" and "Sleep operations" may be performed if the equipment is connected as shown in the figure below. For this, obtain an optional timer (such as the DT-510 by PIONEER).



Unattended Recording

FM programs can be recorded while you are out.



1 **Depress the REC switch after the PAUSE switch has been depressed.**

2 **Operate the tuner and tune in the broadcasting station whose program you wish to record.**

3 **Set the recording level.**

4 **Turn the stereo amplifier's volume control to the minimum position.**

NOTE: Remember to turn down the stereo amplifier's volume control so that the sound from the speaker systems is not too loud while you are out.

5 **Set the timer.**

Set the timer so that the power is switched on at the desired time (by referring to the timer's Operating Instructions).
Once the timer has been set, the power to the unit, stereo amplifier and tuner is switched off. Set the timer so that the power is switched off after all the tape has been wound up.

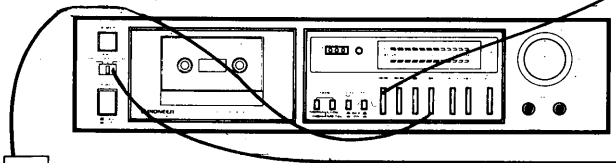
6 **Set the TIMER START switch to the REC position.**

The power will be supplied at the time set by the timer and recording will start in 4 seconds' time.

Wake-up Playback

Tape play can be made to start at the desired time.

NOTE: Make sure that the volume is not too high when play begins (adjust this with the stereo amplifier's volume control).



1 **Depress the PLAY switch (▶) and start play.**

2 **Adjust the volume using the control on the stereo amplifier.**

3 **Depress the REWIND switch (◀◀).**

4 **Set the timer.**

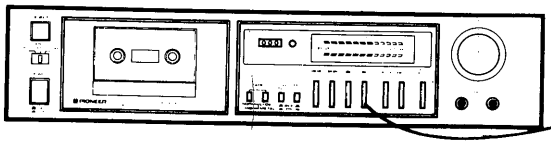
Set the timer so that the power is supplied at the desired time (by referring to the Operating Instructions of the timer).
Once the timer is set, the power to the unit and the stereo amplifier is switched off.

5 **Set the TIMER START switch to the PLAY position.**

The power is switched on at the time set by the timer and play begins. Once the tape has been completely wound up, it automatically stops.

Sleep Operation

This functions allows you to doze off to sleep while listening to your favorite music.



1 **Set the timer.**

Set the timer so that the power will be switched off in 30 to 60 minutes. (Refer to Operating Instructions of the timer.)

2 **Depress the PLAY switch (▶) and start play.**

The power is switched on at the time set by the timer and play the time set by the timer.

MAINTENANCE

Cleaning the head section

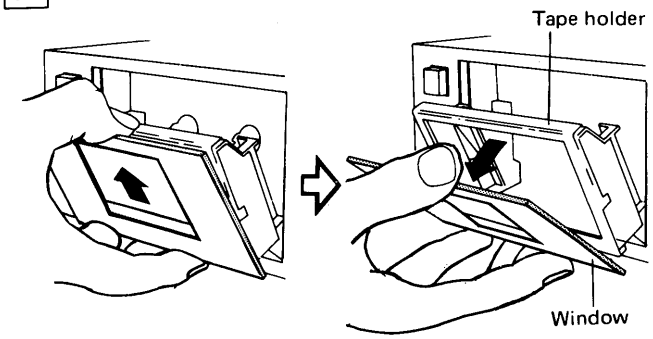
- **Clean the head section regularly (about once a week) using cleaning sticks and commercially available head cleaner from your audio dealer. (PIONEER offers a cleaning kit as an option.)**

- **The heads, pinch roller and capstan are all very susceptible to dirt. Once dirty, the high range response drops off, the volume of sound in the left and right channels differs and the sound becomes distorted.**

How to clean

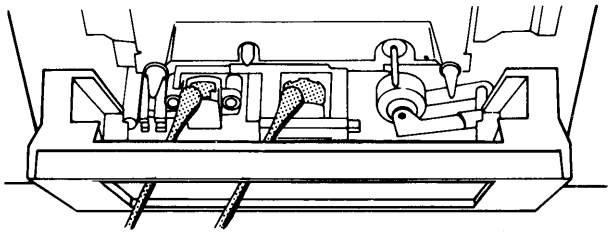
1 **Depress the EJECT button and open the tape holder.**

2 **Pull up the window and then pull it toward you to remove it.**



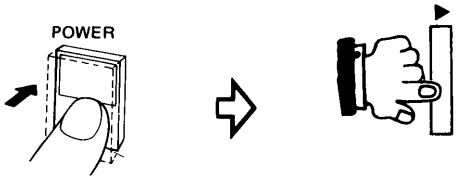
3 **Clean the heads.**

Clean off the dirt with cleaning sticks dipped in the cleaning fluid.



4 **Close the tape holder.**

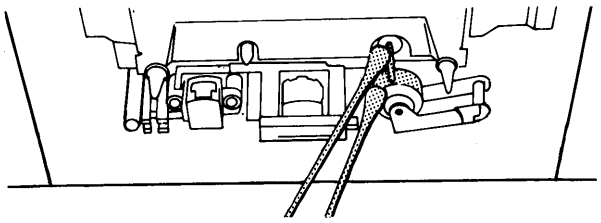
Set the POWER switch to ON and depress the PLAY switch (▶).



5 The capstan and pinch roller now rotate.

6 **Clean the capstan and pinch roller**

Bring the cleaning stick into contact with the capstan and pinch roller and clean off the dirt while they rotate.
Do not force the stick against these parts or they will stop rotating and make it impossible to clean them.



7 **Depress the EJECT button to open the tape holder and reattach the window.**

Proceed following the steps in [2] in reverse.

NOTE: Do not insert a tape until the cleaning fluid has dried (it takes 2 or 3 minutes) after cleaning.

Panel and window maintenance

- **When dust and dirt have adhered:**
Wipe off with a polishing cloth or soft dry cloth.

- **When stains cannot easily be removed:**
Dip a soft cloth into a neutral detergent diluted with 5 or 6 times the amount of water, wring it out and clean off the stains. Then use a soft dry cloth to wipe off all the moisture.

- **Do not use chemicals of furniture wax:**
Do not clean off dirt with furniture wax, thinners, benzene or other chemicals since they will discolor and disfigure the surface finish.

- **Do not spray insecticides:**
This will discolor the surface finish or result in cloudiness.

Demagnetizing the heads

The recording head may become magnetized when used for long periods of time. This causes the treble to fall off during recording and playback and generates noise. Obtain a head eraser and demagnetize the heads regularly. For details, refer to the Instructions accompaying the head eraser.

CASSETTE TAPES

●Classification by performance

Normal type		High-performance type
• Normal tapes	• Low-noise tapes	• Metal tapes
• Dynamic tapes	• Low-noise high-output tapes	• Chrome tapes

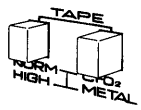
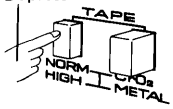
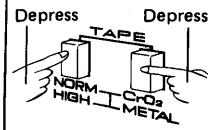
NOTE:
Although all cassette cases are the same size, the playing and recording time differs according to the length (thickness) of the tape. The C-60 and C-90 tapes are most often used today. C-120 tapes are not recommended because their mechanical and electrical characteristics undergo change.

●Classification by play (recording) time

Name of cassette tape	Recording time (min.)	
	One side	Both sides
C-30	15	30
C-46	23	46
C-60	30	60
C-90	45	90

LISTING OF TAPES

This table shows the proper settings of the tape selector for all leading brands of tapes.

Tape selector	Brands										
	PIONEER	SONY	TDK	FUJI	SCOTCH	MAXELL	DENON	BASF	AMPEX	AGFA	PHILIPS
NORM position for normal tape  Set the both switches to released	N1-60 N1-90 N2-60 N2-90	HF AHF BHF CHF	D OD ED AD	DR ER FX Range 2 Range 4 Range 6	LH CRYSTAL M-12 MASTER I	LN UD UL UDXL 1 XL 1	DX-3 DX-1	LH LN LH SUPER SLH-1	STUDIO QUALITY PLUS SERIES	LH SUPER HIGH DYNAMIC	–
HIGH and CrO_2 position for chrome tape Depress 	C1-60 C1-90	CR JHF	KR SA SA-X	UR Range 4X	M-7 MASTER II	CR UDXL II XL II	DX-7	CHROM DIOXID SCR	–	–	CrO_2
HIGH and METAL position for metal tape Depress Depress 	M1-46 M1-60	METALIC	MA MA-R	SUPER RANGE	METAFINE	MX	DXM	–	–	–	–

●Playing sides of cassette tapes

Every cassette tape has two playing sides, A (front) and B (back). Recording is also possible on both sides. When loading the tape into the cassette holder, the side which is facing you will be played (or recorded).

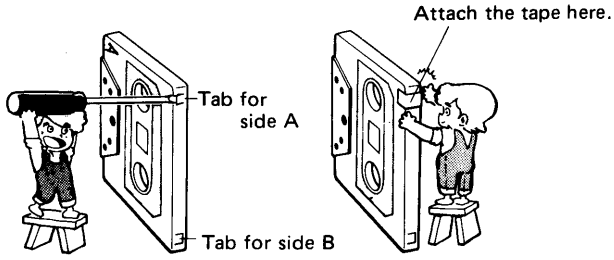
●Cassette tape maintenance

Keep the cassette tapes in their cases so that no dust or dirt can adhere to the tape surfaces after use and so that tape slack is prevented. Store the tapes in a location which is not affected by dirt, dust, oil, or magnetism (on top of speakers or TV sets, etc.).

●Accidental erasure prevention tabs

Cassette tapes are provided with accidental erasure prevention tabs on the top surface (1 each for side A and side B) so that you can preserve your recordings.
When these tabs are broken out with a screwdriver, the unit's sensing mechanism works to prevent any recording on the tape.

Break out the tabs when preserving recorded material.
The tabs can be broken out separately for side A and side B.
To re-record material onto tapes whose tabs have been broken out, attach a piece of cellophane tape over the tab opening.



DOLBY NOISE REDUCTION SYSTEM

This unit comes with a Dolby noise reduction system that greatly reduces tape hiss which is inherent to tapes during recording. It works like this: since the tape hiss has a high frequency, the high-frequency signals are emphasized at a low level and recorded; when these emphasized parts are attenuated during playback, the noise is reduced by an amount equivalent to the attenuated part for a good-quality recording with minimal distortion.

Precautions when using Dolby

- Basically, the recording level adjustment is the same as when the Dolby NR system is not used.
- Always play back tapes which have been recorded using the Dolby NR system.
- The original sound will not be reproduced if a normally recorded tape is played back with the Dolby system or if a tape recorded with the Dolby system is played back normally.

- Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.
- "Dolby" and the double-D DD symbol are trade marks of Dolby Laboratories Licensing Corporation.

ENGLISH

SPECIFICATIONS

Tape Deck Section

System	Compact cassette, 2-channel stereo
Motor	DC servo motor x 1
Heads	"Hard Permalloy" recording/playback head x 1 "Ferrite" Erasing head x 1
Fast Winding Time	Approximately 100 seconds (C-60 tape)
Wow and Flutter	No more than 0.05% (WRMS)
Frequency response	No more than 0.17% (DIN)
–20 dB recording:	
Normal, LH tapes	20 to 15,000 Hz (30 to 14,000 ±3 dB)
Chromium dioxide tape	20 to 17,000 Hz (30 to 16,000 Hz ±3 dB)
Metal tape	20 to 18,000 Hz (30 to 17,000 Hz ±3 dB)
0 dB recording:	
Chromium dioxide tape	30 to 8,000 Hz ±3 dB
Metal tape	30 to 12,500 Hz ±3 dB
Signal-to-Noise Ratio	
Dolby NR OFF	More than 58 dB
Dolby NR ON	More than 68 dB (over 5 kHz)
Harmonic Distortion	No more than 1.2% (0 dB)
Input (Sensitivity/Maximum allowable input/Impedance)	
MIC (L, R)	0.3 mV/57 mV/10 kΩ, 6 mm diam. jack
(Reference MIC impedance; 250 Ω to 10 kΩ)	
LINE (INPUT)	50 mV/25 V/75 kΩ, Pin jack
Output (Reference level/Load impedance)	
LINE (OUTPUT)	450 mV/50 kΩ, Pin jack

Subfunctions

- Dolby NR system (ON/OFF)
- MS (Music Search) system
- Stand-by mechanism with unattended recording
- REC muting function
- Auto start/Auto stop
- IC logic control
- 3 position tape selecter (NORM/CrO_2/METAL)
- Fluorescent display peak level meter (–20 to +8 dB)
- One touch recording system

Miscellaneous

Power requirements	AC 220 V/240 V (switchable) 50/60 Hz
Power Consumption	20 watts
Dimension	420 (W) x 100 (H) x 244.5 (D) mm 16-9/16 (W) x 3-15/16 (H) x 9-5/8 (D) in.
Weight (without package)	4.0 kg (8 lb 13 oz)

Furnished Parts

Connection cord with pin plugs	2
Operating instructions	1

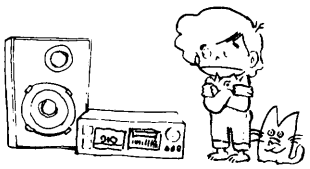
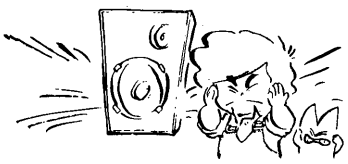
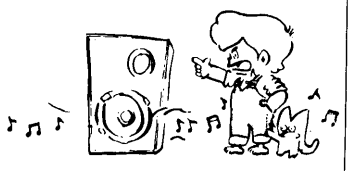
Note:
Specifications and the design subject to possible modifications without notice due to improvements.

NOTES:

1. Reference Tapes: Normal & LH: DIN 45513/BLATT6 or equiv.
   CrO_2 DIN 45513/BLATT7 (CrO_2) or equiv.
2. Reference Recording Level: Meter 0 dB indicating lelel (160 nwb/m magnetic level = Philips cassette reference level)
3. Reference Signal: 333 Hz
4. Wow & Flutter: • JIS [3 kHz, with accustic compensation (weighted) rms value] DIN [3,150 Hz, with acoustic compensation (weighted) PEAK value]; DIN 45507
5. Frequency Response: • Measured at –20 dB level, DOLBY NR OFF, level deviation is ±6 dB without indication.
6. Signal to Noise Ratio: • Measured at the third harmonic distortion 3% level, weighted (DIN 45513/BLATT7).
7. Sensitivity: Input level (mV) required for reference recording level with inptu (REC) controls set to maximum.
8. Maximum Allowable Input: While decreasing settings of input (REC) level controls and increasing level at input jacks, this is the maximum input level (mV) at the point where recording amplifier output waveform becomes clipped.
9. Reference Output Level: Playback output level when meter indicates 0 dB.

TROUBLESHOOTING

Apparent malfunctions are often caused by faulty or incorrect operation. If you think that something has gone wrong with your unit, check out the points in the list below.
The trouble may lie in another component. Check the stereo amplifier, speaker and other appliances being used.
If the trouble is not remedied after checking the points below, contact your dealer and ask for the serviceman.

Symptom	Possible cause	Remedy
No tape travel (no playback or recording) 	1. Disconnected power cord. 2. Tape is wound up. 3. PAUSE switch at ON.	1. Re-connect cord. 2. Rewind tape (see page 8). 3. Depress PAUSE switch and release. (see page 6).
No sound. 	1. No sound recorded on tape. 2. Incorrect amplifier operation. 3. Incorrect connections with amplifier.	1. Replace with pre-recorded tape. 2. Set amplifier's POWER and TAPE/ ADAPTOR (TAPE monitor) switches to ON. 3. Refer to page 3 and re-connect equipment.
No recording. 	1. Tape tabs broken out. 2. Incorrect connections with amplifier.	1. Replace tape or cover tab openings (see page 12). 2. Refer to page 3 and re-connect equipment.
Distorted sound and noise. 	1. Distorted sound recording on tape. 2. Old worn tape. 3. Tape recorded using the Dolby NR system is being played with the DOLBY NR switch at OFF. 4. Heads are dirty or magnetized.	1. Re-adjust recording level properly and re-recorded (see page 6). 2. Replace with new tape. 3. Set DOLBY NR switch to ON. 4. Clean or demagnetize heads (see page 11).
No treble. 	1. Heads are dirty or magnetized. 2. TAPE SELECTOR switch position does not match tape type. 3. A tape recorded without the Dolby NR system is being played back with the DOLBY NR switch at ON.	1. Clean or demagnetize heads (see page 11). 2. TAPE SELECTOR switch in line with type of tape being used (refer to table on page 12). 3. Set the DOLBY NR switch to OFF.